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UNO FACES THE PROBLEM OF ATOMIC ENERGY CONTROL

On the eve of the opening session of the General Assembly of the UNO it is of importance to review the events marking the initial phase of the international control of atomic energy — the creation of an atomic energy commission within the UNO.

The first official statement of U. S. policy was isued on November 15 in a declaration signed by Truman, Atlee and King, the heads of the three countries which collaborated in the development of the atomic bomb. The gist of the statement is:

"In order to attain the most effective means of entirely eliminating the use of atomic energy for destructive purposes and promoting its widest use for industrial and humanitarian purposes, we are of the opinion that at the earli est practicable date a Commission should be set up under the United Nations Organization to prepare recommendations for submission to the Organization.

The Commission should be instructed to proceed with the utmost dispatch and should be authorized to submit recommendations from time to time dealing with separate phases of its work.

In particular the Commission should make specific proposals:

(a) For extending between all nations the exchange of basic scientific information for peaceful ends,

(b) For control of atomic energy to the extent necessary to ensure its use only for peaceful purposes,

(c) For the elimination from national armaments of atomic weapons and of all other major weapons adaptable to mass destruction,

(d) For effective safeguards by way of inspection and other means to protect complying states against the hazards of violations and evasions.

The work of the Commission should proceed by separate stages, the successful completion of each one of which will develop the necessary confidence of the world before the next stage is undertaken. Specifically it is considered that the Commission might well devote its attention first to the wide exchange of scientists and scientific information, and as a second stage to the development of full knowledge concerning natural resources of raw materials."

"Representing as we do, the three countries which possess the knowledge essential to the use of atomic energy, we declare at the outset our willingness, as a first contribution, to proceed with the exchange of fundamental scientific information and the interchange of scientists and scientific literature for peaceful ends with any nation that will fully reciprocate."

"We are not convinced that the spreading of the specialized information regarding the practical application of atomic energy, before it is possible to devise effective, reciprocal, and enforceable safeguards acceptable to all nations, would contribute to a constructive solution of the problem of the atomic bomb. On the contrary we think it might have the opposite effect. We are, however, prepared to share on a reciprocal basis with others of the United Nations, detailed information concerning the practical industrial application of atomic energy just as soon as effective enforceable safeguards against its use for destructive purposes can be devised."

* * *

The second official action was taken by Foreign Ministers Bevin and Molotov and Secretary of State Byrnes at their Moscow Conference (Dec. 16-26). They drew up a resolution to be sponsored by the permanent members of the Security Council (plus Canada) and to be introduced at the first session of the General Assembly.

The essential features of the resolution are:

An atomic energy commission shall be established by the General Assembly.

"The commission shall be composed of one representative from each of those states represented on the Security Council, and Canada, when that state is not a member of the Security Council."

(Continued on Page 3)

STRUCTURE OF THE UNO

All delegates to the UNO are appointed by and are responsible to the national governments.

The principal organs of the UNO are: General Assembly; Security Council; Economic and Social Council; Trusteeship Council; International Court of Justice; Secretariat.

General Assembly:

Meets annually. First meeting January 10th 1946 in London.

Each member nation of the UNO may send up to five delegates but each nation has only one vote. Many questions require a 2/3 majority vote.

The Assembly may consider and discuss questions relating to the maintenance of international peace and security and make recommendations. Exception: if a situation is already under consideration by the Security Council, the Assembly can make recommendations only if requested by the Council. Questions requiring action must be referred to the Council, either before or after discussion by the Assembly.

The Assembly may promote international cooperation in political, economic, social, cultural, educational, and health fields, and has certain trusteeship functions for dependent areas not designated as strategic.

Security Council:

Eleven member nations, one representative from each. Will function continuously. Five nations are permanent members: China, France, Great Britain, Soviet Union, and the United States. The other six nations are elected for two year terms by the Assembly.

Voting on procedural matters takes an affirmative vote of any seven members. In all other matters the five permanent members must concur, plus any two others.

The Security Council may recommend appropriate procedures or methods of adjustment in any situation deemed likely to endanger international peace and security. Discussion of such situations is not limited, but the Big Five retain veto power in decisions as to what constitutes a threat to peace. a breach of the peace, or an act of aggression, whether it should be investigated, and what should be done about it. If military measures are required, the Military Staff Committee, consisting of the Chiefs of Staff (or their representatives) of the five per-

(Continued on Page 4)

UNIV. OF MICH.

Atomic Energy Control Problems

2. *General Analysis*

The Senate Special Committee on Atomic Energy has formally requested the Federation of Atomic Scientists to study and prepare statements on the following two subjects:

a. The technical feasibility of the international control of atomic energy. This will be a detailed technical study, using secret material, but keeping within compartmentation rules.

b. Its considered opinion on the political steps to be taken by the United States in order to increase world security and to hasten the adoption of international controls of atomic energy.

At present, specially qualified groups at each of the project sites are preparing the secret reports on the feasibility of controls. As a preliminary attack on the problem, the FAS prepared, early in December, the following analysis:

The overall problem of international **control** and **inspection** of atomic energy utilization is primarily political in nature. The control of atomic energy on a world level is a political problem. However, in order to analyze the inspection problem, both the political and technical feasibility problems can be separately but comprehensively treated. This may be done before the solutions are integrated to solve the major problem of complete feasibility.

The technical problem of **inspection** may be divided into two categories: on the one hand, there are materials, equipment, construction, plants, and scientific and technical information; on the other hand, there are the scientific and technical personnel who must be involved in any large scale atomic energy installation.

We in the United States, have shown the practicability of five methods for the production of fissionable materials: The construction of piles for the production of plutonium-239 and four methods (gaseous diffusion, thermal diffusion, electromagnetic, centifuge) for separating uranium-235.

The choice of any one of these methods by a potentially evading country will depend: first, upon the efficiency of the method; second, upon the ability to conceal the plant or plants; and third, upon the nature of the resources of the country.

The primary requisite of any inspection system is the political agreement guaranteeing the free access of inspectors to all places deemed by the international control commission to require inspection. On this premise, the security afforded by the following methods will have to be evaluated:

1. Complete geological survey over the whole world for all potential reserves of ores containing uranium and thorium, in order to prevent the operation of any hidden mines.
2. Detection of secret plants or mining operations by aerial survey or other methods, which may include photography, radioactivity detecting devices etc.
3. Detection of secret construction of large scale plants, which may then be investigated as to their nature. The nature of any plant manufacturing fissionable material may easily be checked once the plant has been located.
4. Check upon the known sources of production of critical materials (such as uranium, high purity graphite) and fabricated equipment (such as centrifugal blowers, large magnets) with adequate checks to see that their production has no connection with plants producing fissionable materials.
5. Checks upon unidentified large consumers of power or power equipment. All plants for the production of fissionable materials consume large amounts of power (if the plants are built as single large units) although certain plants may be able to manufacture their own power.
6. Checks upon all known laboratories to determine whether the research and development work were headed for large-scale plant construction.
7. Setting up of an international laboratory staffed with top-flight men working on the problem of atomic energy, to keep ahead of any single nation in developing new methods which may make inspection procedures obsolete.
8. In case large scale plants for the production of fissionable materials or atomic power are built, a complete inventory of the critical materials (e.g., uranium) from the mine and through the plants to insure that no illegal diversion occurs at any point.

A second phase of the overall technical problem of inspection involves the scientific and technical personnel who must be involved in any large scale atomic energy installation. This phase is itself clearly divided into three issues:

1. A complete check of all the scientific and technical personnel in every country to insure that no important number are being secretly trained and diverted for the development and construction of large scale atomic energy plants.
2. Any intended violation by a given country will of necessity be known to some of the scientific and technical personnel in that country. Because of their overwhelming desire to maintain the security of the world, there will always be a certain percentage of these scientists and technical men who will wish to report violations to the international control commission. International and national laws should encourage, and offer definite protection to those who report violations.
3. To prevent the secret disappearance of key scientific and technical personnel and to detect the possible discoveries and developments which may lead to new methods for the production of fissionable material and atomic weapons, there should be a thoroughgoing interchange of scientists and technical men. As a further safeguard, there should be complete freedom of publication of all scientific and technical discoveries and developments.

The development of a complete picture of the technical aspects of inspection involves the knowledge of people in a wide variety of fields, of which the field of atomic energy is only one. It is equally important that information be secured from experts in the fields of:

1. Geology and mining operations; 2. Rockets; 3. Inspection personnel; 4. Economics of production (e.g., national resources and planning board); 5. Special products, special chemicals and rare materials required in atomic energy plants (e.g., graphite, beryllium, uranium hexafluoride); 6. Radar; 7. Aerial survey; 8. Power engineering.

Because of the secrecy and compartmentation limitations in the Manhattan Project, it has been impossible for experts in each branch to consider any problem which involved a detailed knowledge of the information available in any other branch. This not only slows down the development of atomic energy in this country at the present time, but also prevents an integrated study of the technical feasibility of inspection.

The longer the setting up and operation of an inspection system is delayed, the more difficult it becomes to make the system effective. It is probably true that secret plants already built are more difficult to find than the plants in the process of being built secretly; it is also probably true that the existence of legitimate large scale plants makes the entire problem of inspection more difficult. As in other scientific and technological developments, all processes tend to become more efficient. In the case of atomic energy plants, they will undoubtedly become smaller, making detection of hidden plants even more difficult.

The first article in this series, dealing with uranium mining controls, was published in No. 2 of this Bulletin.

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UNO FACES THE ATOMIC ENERGY PROBLEM Cont'd

"The commission shall submit its reports and recommendations to the Security Council and such reports and recommendations shall be made public unless the Security Council, in the interests of peace and security, otherwise directs."

"In view of the Security Council's primary responsibility under the Charter of the UNO for the maintenance of international peace and security the Security Council shall issue directions to the commission in matters affecting security. On these matters the commission shall be accountable for its work to the Security Council."

The specific tasks of the commission are enumerated in exactly the same language and order employed in the T-A-K statement. The resolution repeats "the work of the commission should proceed by separate stages the successful completion of each one of which will develop the necessary confidence of the world before the next stage is undertaken. In contrast to the T-A-K statement, the resolution makes no specific recommendation on the order in which problems are to be studied by the commission.

Furthermore, the original T-A-K announcement stated that "the commission should be instructed to submit recommendations from time to time dealing with separate phases of its work." On the other hand the Moscow communique states that "the commission shall **enquire into all phases of the problem** and make recommendations from time to time with respect to them as it finds possible." The resolution, which will be presented to the Assembly, follows the wording of the Moscow communique.

* * *

Senator Vandenberg consulted with President Truman and Undersecretary of State Acheson, immediately after the Moscow Conference, and on December 28 he issued the following statement:

"I would not be able to agree that the problem can be handled by separate and unrelated stages. I particularly share what I believe to be the general Congressional opinion that any disclosures regarding the atomic bomb should be part of a complete plan for adequate world-wide inspection and control. For these reasons I have sought additional official information today regarding the program announced in the Moscow communique.

"I am advised by the State Department that while the communique listed four separate objectives, with inspection and control listed last, it is not intended that these objectives should be taken in the order indicated but that it is intended that the four shall be read together and that each shall be accompanied by full security requirements—all being finally subject to Congressional approval.

"This helpfully clarifies the situation. I shall present my own views to the American delegation in London."

* * *

Secretary of State Byrnes, on his return from Moscow, stated in a radio talk delivered on December 30:

"The British and ourselves came to Moscow with a very definite proposal for the establishment by the United Nations of a commission on atomic energy and related matters, based on the Washington declaration of the President of the United States and the Prime Ministers of Great Britain and Canada on that subject. At the request of the Soviet Government the discussion of our proposal was placed at the end of our agenda. Our discussions were limited to this proposal. At no time did we discuss any technical or scientific matters; nor were we asked by the Soviet Government about the new weapon. I was happy to find that the Soviet Government feels as we do that this particular weapon is of such a revolutionary nature that we should explore through a United Nations commission methods of international control.

It should be understood that the task of the comission is to inquire into the problems raised by the discovery of atomic energy and related matters and to make recommendations. Neither the Security Council nor the commission has authority to bind any Government to act on its recommendations.

The four objectives set forth in the proposed resolution establishing the commission are not intended to indicate the order in which they are to be considered. In particular, it was intended and is understood that the matter of safeguards will apply to the recommendations of the commission in relation to every phase of the subject and at every stage. Indeed, at the root of the whole matter lies the problem of providing the necessary safeguards.

Neither we nor any other nation would be expected to share our armament secrets until it was certain that effective safeguards had been developed to insure our mutual protection.

The Soviet Government offered only a few amendments to the proposal submitted by us. These amendments were designed to clarify the relations of the commission to the Security Council. With some revisions we accepted them.

Carefully examined, these amendments will be found to go no further than appropriate to enable the Security Council to exercise its primary responsibility for maintenance of peace and security.

The Security Council can give directions to the commission, and restrain publication of reports detrimental to peace and security, but such action can be taken only with the concurrence of all its permanent members. Failure of the Security Council to act cannot block the work of the commission.

The three Governments have invited France, China and Canada to join us in submitting the proposed resolution to the Assembly of the United Nations."

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Just before leaving for London on Jan. 7, Secretary Byrnes issued a further statement concerning the Moscow resolution.

He said the resolution on atomic energy control undoubtedly would be referred to a UNO assembly committee. On that group American representatives would have "ample opportunity to make certain that there is no misunderstanding as to the purpose, scope, and operation of the commission."

Byrnes added that he did not see how the language used in the resolution "can possibly be construed to give the commission authority to obtain information which is not publicly available or which is not voluntarily given to it. Under the United Nations charter, neither the assembly nor any commission created by it has authority to compel action on the part of any state."

"The language of the resolution makes clear that even as to the exchange of basic scientific information for peaceful purposes, the commission has authority only to make recommendations."

He said that if the commission recommended exchange of atomic energy information, the recommendation would have to be approved by the UNO Security Council.

"Therefore, unless the United States concurs in the recommendation, it could not be adopted. If the United States concurred and the security council adopted the recommendation, it would still be for the government of the United States by treaty of by congressional action to determine to what extent that recommendation should be acted upon.

"If action is required by treaty, it would take a two-thirds vote of the senate to ratify the treaty.

"Under all these circumstances, I think the interests of the United States are fully protected."

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Legis. Research .....F. L. Friedman
Records .....R. L. Platzman

The Federation of Atomic Scientists

Conference on Controls with Carnegie Group

A conference sponsored jointly by the Carnegie Endowment for International Peace and the Federation of Atomic Scientists was held in New York on Jan. 4 and 5. The Atomic Scientists of Chicago was represented by R. Adams, T. Hogness, E. Rabinowitch and J. A. Simpson.

The morning session on February 4 was opened by Prof. Shotwell. It was devoted to technical problems of the international control of atomic energy. Dr. Crist, (director, SAM Laboratories, Manhattan District) gave a general introduction. Prof. P. F. Kerr of the Geology Department of Columbia University, presented, on behalf of a committee of mining engineers, geologists and other scientific and administrative experts, a report on the international inspection of radioactive mineral production. The conclusions of this report coincided with those presented in the article on "Mining Controls" in No. 2 of this Bulletin. This agreement strengthened the impression that a control of atomic energy based on inspection of mines is technically feasible.

In the discusion the suggestion was made by E. Rabinowitch (Chicago) and C. Williams (New York) that international control could be made easier if inspection of uranium mines were replaced by their outright operation by an international cartel under the UNO Atomic Energy Control Commission.

Reports on the inspection of various plants for the production of fissionable materials were given by Dr. Benedict (Kellex corporation, constructor of the gaseous diffusion plant at Oak Ridge), Dr. T. Hogness, Dr. J. A. Wheller Plutonium Project). General consensus was that discovery of the fact that an illicit atomic explosive factory **is being built,** might be easier than the discovery that a finished plant is **in operation.** Prevention of diversion of fissionable material from a "legitimate" plant to illicit bomb production also was considered as difficult. Therefore, the best method to prevent bomb production is not to have any large-scale plutonium production or isotope separation plants at all and to introduce inspection before such plants can be built by various countries.

The afternoon meeting, opened by C Eichelberger, was concerned with the political problems of international controls. Maj. G. F. Elliot spoke on the American political situation, and suggested that further tests of the atomic bomb —for example, those contemplated by the Navy—be accompanied by the greatest publicity in order to arouse public opinion. I. Lubin (special advisor to the President) spoke of his impressions in USSR. He stressed the suspicion of the motives of the Western powers which is characteristic of the Russian governing groups, and of their consequent extreme secretiveness. However, he did not consider it impossible for the Russians to be persuaded to for cooperate in an international control program. What is needed, is to convince the very top leadership, since USSR does not delegate authority to its diplomats, not to speak of scientists.

Prof. Davis summarized the attitude of other European countries, stressing their worry about the attitude of both USA and USSR., and Alexander King (head of the British Scientific Mission in Washington) reported similar apprehension in England. England has no physical fear of American atomic bombs, but great fear of American economic imperialism and of American policy on Russians to be persuaded to co-international control of atomic energy, and that this attitude was supported by scientists from France, Norway, Denmark and other European countries who met recently in London.

The meetings on December 6 were devoted to the discussion of the structure of UNO and the problems of world government in relation to the atomic energy controls.

They will be reported in one of the next issues of this Bulletin.

LEGISLATIVE CONFERENCE

A bill for the the control of atomic energy was introduced in the Senate by Senator B. McMahon on December 20, 1945.

The first draft of this bill was available to representatives of the atomic scientists associations which met at Chicago on December 27-28, 1945. The meeting was attended by T. H. Davies (Clinton), B. T. Feld and A. Novick (Los Alamos), I. Kaplan and G. Lister (New York), F. L. Friedman and T. H. Hogness (Chicago), and by legal advisors from the U. of C. Law School. The consensus was that the McMahon draft presents an acceptable solution, and should be supported by scientists with some amendments, intended to strengthen and clarify rather than to change the intentions of the bill.

These conclusions were circulated to the sites with request for further comments. It is intended to formulate the final recommendations before the Senate reconvenes in a week.

The report of the legislative conference was discussed and endorsed by the general meeting of the ASC on Jan. 3.

National Committee on Atomic Information

In the previous issue, we reported the formation of the National Committee on Atomic information by 50 nation-wide organizations with the co-operation of the Federation of Atomic Scientists. Since then, the number of participating organizations has increased to 60.

The officers of the Committee are: Chairman: Ralph McDonald, National Education Association, Vice-Chairman: Helen Dwight Reid, American Association of University Women, Secretary: Mrs. Leslie Falk, United Council of Church Women, Treasurer: Rev. E. A. Conway, Catholic Association for International Peace.

On Jan. 2, 1946, the Committee moved into the office put at its disposal by the Federation of Atomic Scientists at 1651 K Street N.W., Washington, D.C. Daniel Melcher, formerly Education Director for the Treasury's War Finance Division, has been appointed full-time Director of the Committee.

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The Committee will make available authoritative information from members of the Federation of Atomic Scientists both to its sponsoring organizations, and to the general public.

The Committee will take special pains to service existing organizations, not to duplicate their efforts.

It has already distributed to the members of the National Committee on Atomic Information copies of the new McMahon bill on domestic control of atomic energy, the first volume of testimony from the hearings before the Senate Committee on Atomic Energy and samples of recent pamphlet material.

BRITISH PUBLIC OPINION

(Continued from Page 5)

Truman-King declaration. Recognizing that confidence is indispensible if any successful scheme of control is to be established, Nature (Nov. 24th) says "it is precisely for that reason that some doubts may be entertained as regards the validity of the argument that 'specialized information regarding the practical application of atomic energy' should be witheld until such time as 'effective, reciprocal and enforcable safeguards acceptable to all nations have been devised." In concurrence The Times (Nov. 23th) asks "whether a generous and ungrudging declaration of willingness to disclose any remaining secrets of the atomic bomb to the Security Council of the UNO or to its principal members accompanied by an invitation to the members of that Council to meet to consider relevant questions of organization and control would not have been a more immediate contribution to international confidence than the contingent and circuitous procedure of the Washington agreement."